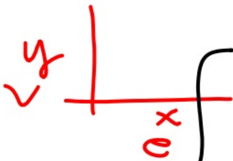
p. 123

$f(e, v) = 5e + 2.4v$ max



Make 25 exp
18 voy
= 168,20

a) $5v + 6e \leq 240$

b) $3v + 2e \leq 120$

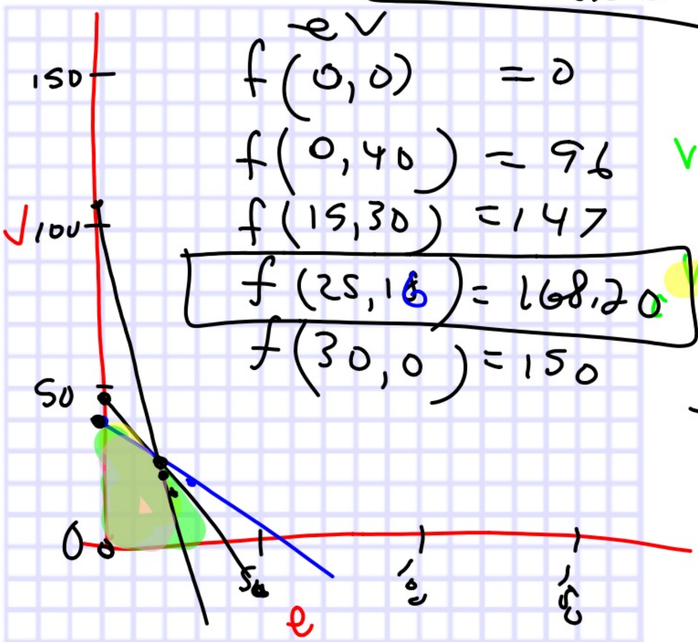
c) $5v + 18e \leq 540$

$v \leq \frac{240}{5} - \frac{6e}{5}$

a) $v \leq -\frac{6}{5}e + 48$ $\quad \frac{-60}{50}$

$v \leq \frac{-2}{3}e + \frac{120}{3}$

b) $v \leq -\frac{2}{3}e + 40$ $\quad \frac{-20}{30}$



e v

$f(0,0) = 0$

$f(0,40) = 96$

$f(15,30) = 147$

$f(25,18) = 168{,}20$

$f(30,0) = 150$

$v \leq \frac{-18e}{5} + \frac{540}{5}$

$v \leq -\frac{18}{5}e + 108$

$-\frac{180}{50}$ $\quad \frac{-90}{25}$

Trig 3.1

Use algebraic tests to determine whether a graph is symmetrical

Classify functions as even or odd

✓reflection

✓rotation

~~translation~~

point symmetry (rotation)

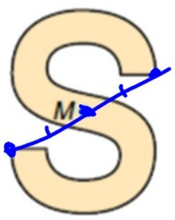
line symmetry (reflection)

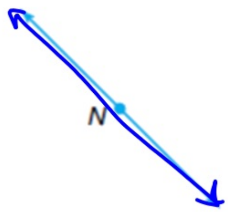
activity: letters

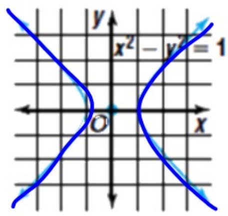
Connect two (corresponding) points. Is M the midpoint?

Point Symmetry	Two distinct points P and P' are symmetric with respect to point M if and only if M is the midpoint of $\overline{PP'}$. Point M is symmetric with respect to itself.

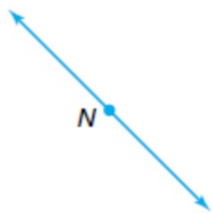
$x^2-y^2=1$

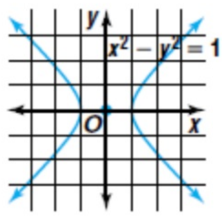






Informally: can it rotate 180 degrees?





Symmetry with Respect to the Origin

The graph of a relation S is symmetric wit
only if $(a, b) \in S$ implies that $(-a, -b) \in S$
gin if an

air (a, b)

$y = -x^3$

(a,b) and (-a,-b)

"Rotation"= symmetric with origin

$b = a^3$

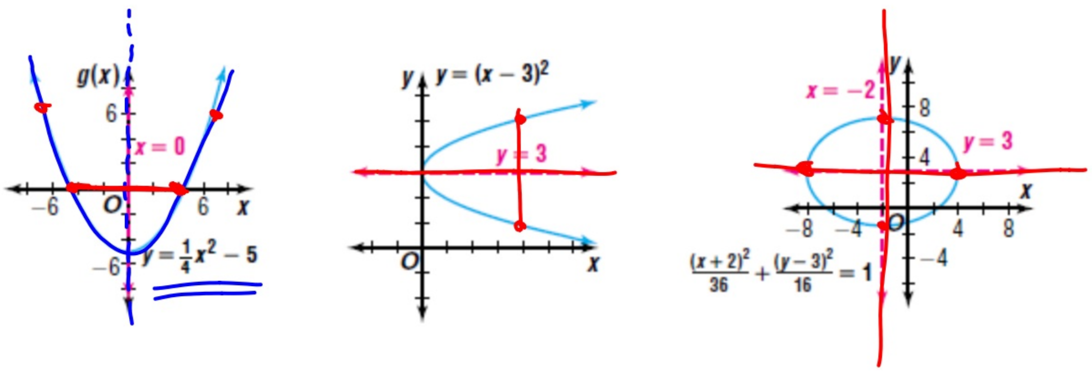
$-b = (-a)^3$

$-b = -a^3$

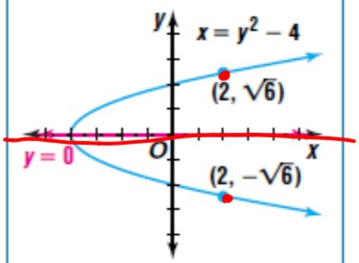
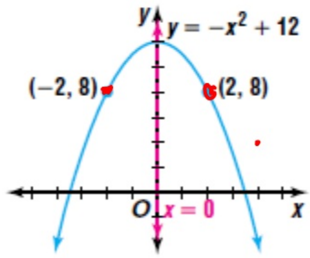
$\frac{-b}{-1} = \frac{-a^3}{-1}$ $b = a^3$

Reflection = line symmetry

Line Symmetry	Two distinct points P and P' are symmetric with respect to a line ℓ if and only if ℓ is the perpendicular bisector of $\overline{PP'}$. A point P is symmetric to itself with respect to line ℓ if and only if P is on ℓ.



PP' is bisected by *l*

Symmetry with Respect to the:	Definition and Test	Example
x-axis	$(a, -b) \in S$ if and only if (	
y-axis		

0 0

(a,b) maps to

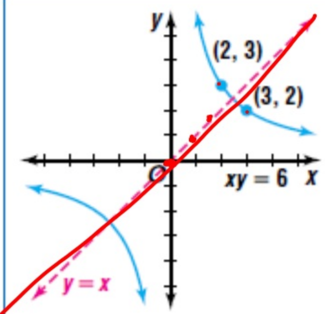
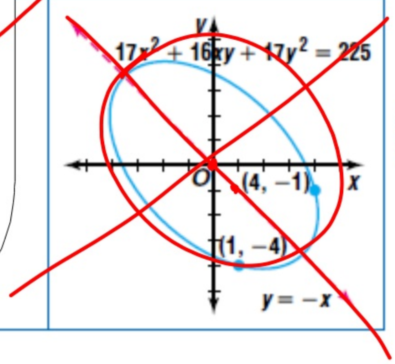
(a,-b)

0,-0

(a,b) maps to

(-a,b)

$y = 1x + 0$

Symmetry with Respect to the Line:	Definition and Test	Example
$y = x$		
$y = mx + b$ $y = -1x + 0$ $y = -x$	equations.	

(a,b) maps to (b,a)

(a,b) maps to (−b,−a)

Test each possibility: yes or no

(a, b)

2 **Determine whether the graph of $xy = -2$ is symmetric with respect to the x-axis, y-axis, the line $y = x$, the line $y = -x$, or none of these.**

$xy = -2 \longrightarrow ab = -2$

no x-axis $(a, -b)$

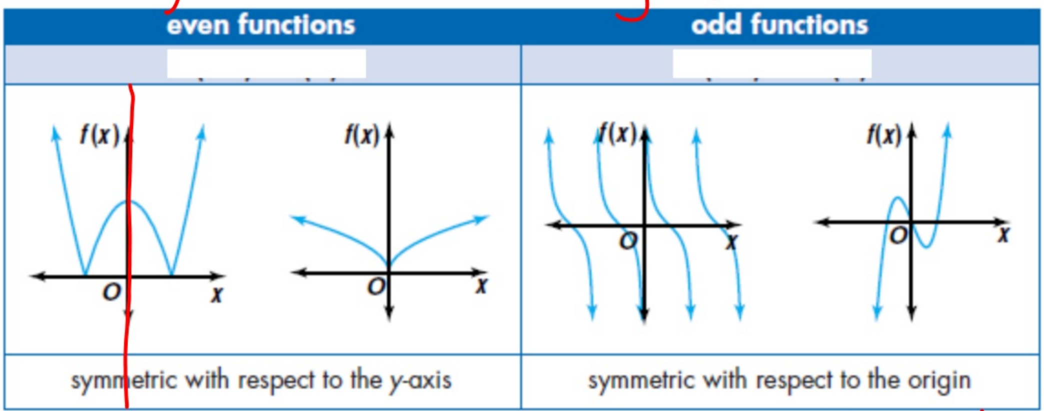
no y-axis $(-a, b)$

yes $y = x$ (b, a) $b \cdot a = -2$

yes $y = -x$ $(-b, -a)$ $-b \cdot -a = -2$

$ab = -2$

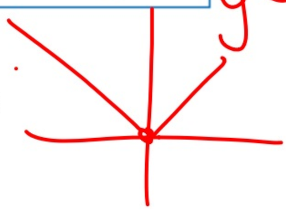
$y=x^2$ $y=x^3$



$y=x^3$

$y=x^3+1$

$y=|x|$



reflect y-axis

rotate 180

$y=x^2-2$ $y=(x-4)^2$

3.1 15-39 o